

WHAT IS CLAIMED IS:

Sub B27

1. A display device comprising:
a substrate;
a plurality of first signal lines formed over said substrate;
5 a plurality of second signal lines extending across said first signal lines over said substrate;
a plurality of switching elements formed at each intersection of said first and second signal lines, each of said switching elements comprising at least one thin film transistor;
10 a smoothing film comprising an organic resin formed over said switching elements;
a plurality of pixel electrodes formed over said smoothing film and electrically connected to said switching elements through contact holes formed in said smoothing film; and
15 a driver circuit comprising at least one IC chip for driving said switching elements.

2. The display device according to claim 1 wherein said pixel electrodes comprise indium tin oxide.

3. The display device according to claim 1 wherein said IC chip is electrically connected to either one of said first signal lines or said second signal lines.
20

4. The display device according to claim 1 wherein said driver circuit further comprises thin film transistors formed over said substrate.

Sub B37

5. The display device according to claim 1 wherein said thin film transistor has a channel region comprising semi-amorphous silicon.

6. The display device according to claim 1 wherein said thin film transistor has a top-gate structure.

~~5~~ 7. The display device according to claim 1 wherein said smoothing film comprises polyimide.

Sub B47

8. A display device comprising:
a substrate;
a plurality of first signal lines formed over said substrate;
a plurality of second signal lines extending across said first signal lines over said substrate;
10 a plurality of switching elements formed at each intersection of said first and second signal lines, each of said switching elements comprising at least one thin film transistor;
a smoothing film comprising an organic resin formed over said switching elements;
15 a plurality of pixel electrodes formed over said smoothing film and electrically connected to said switching elements through contact holes formed in said smoothing film; and
a driver circuit comprising at least one IC chip for driving said switching elements,
20 wherein said IC chip is connected to said substrate through a tape automated bonding process.

~~7~~ 9. The display device according to claim ~~8~~ wherein said IC chip is mounted on a flexible support.

~~8~~ 10. The display device according to claim ~~8~~ wherein said pixel electrodes comprise indium tin oxide.

11. The display device according to claim 8 wherein said IC chip is electrically connected to either one of said first signal lines or said second signal lines.

12. The display device according to claim 8 wherein said driver circuit further comprises thin film transistors formed over said substrate.

13. The display device according to claim 8 wherein said thin film transistor has a channel region comprising semi-amorphous silicon.

14. The display device according to claim 8 wherein said thin film transistor has a top-gate structure.

15. A display device comprising:
a substrate;
a plurality of first signal lines formed over said substrate;
a plurality of second signal lines extending across said first signal lines over said substrate;
a plurality of switching elements formed at each intersection of said first and second signal lines, each of said switching elements comprising at least one thin film transistor;
a smoothing film comprising an organic resin formed over said switching elements;
a plurality of pixel electrodes formed over said smoothing film and electrically connected to said switching elements through contact holes formed in said smoothing film; and
a driver circuit comprising at least one IC chip for driving said switching elements,
wherein said IC chip is formed on a flexible support and said flexible support is connected to said substrate.

~~12~~ 16. The display device according to claim ~~11~~ wherein said thin film transistor has a top-gate structure.

~~13~~ 17. The display device according to claim ~~11~~ wherein said pixel electrodes comprise indium tin oxide.

5 ~~14~~ 18. The display device according to claim ~~11~~ wherein said IC chip is electrically connected to either one of said first signal lines or said second signal lines.

10 ~~15~~ 19. The display device according to claim ~~11~~ wherein said driver circuit further comprises thin film transistors formed over said substrate.

~~16~~ 20. The display device according to claim ~~11~~ wherein said thin film transistor has a channel region comprising semi-amorphous silicon.

Sub B67
15 21. A display device comprising:
a substrate;
a plurality of first signal lines formed over said substrate;
a plurality of second signal lines extending across said first signal lines over said substrate;
a plurality of switching elements formed at each intersection of said
20 first and second signal lines, each of said switching elements comprising at least one thin film transistor;
a smoothing film comprising an organic resin formed over said switching elements;
a plurality of pixel electrodes formed over said smoothing film and
25 electrically connected to said switching elements through contact holes formed in said smoothing film; and

a driver circuit comprising at least one IC chip for driving said switching elements,
wherein said IC chip is mounted over said substrate.

5 22. The display device according to claim 21 wherein said thin film transistor has a top-gate structure.

~~19~~ ~~23~~ 17 The display device according to claim ~~21~~ wherein said pixel electrodes comprise indium tin oxide.

10 24. The display device according to claim 21 wherein said IC chip is electrically connected to either one of said first signal lines or said second signal lines.

25. The display device according to claim 21 wherein said driver circuit further comprises thin film transistors formed over said substrate.

15 ~~26~~ The display device according to claim 21 wherein said thin film transistor has a channel region comprising semi-amorphous silicon.